

Claims

1. A method for producing a monoclonal antibody, said method comprising the steps of:
 - a) introducing at least one candidate antigen into an animal;
 - b) recovering antibody-producing cells from said animal and rendering these cells into
5 a single cell suspension;
 - c) generating an immortalized cell line from said single cell suspension;
 - d) screening the supernatant of said immortalized cell line against a protein chip on which the candidate antigen is displayed; and
 - e) selecting as said monoclonal antibody, an antibody that binds to said candidate
10 antigen.
2. The method of claim 1 wherein said animal is a mouse, a rat, a guinea pig or a rabbit.
3. The method of claim 1 or claim 2 wherein said candidate antigen is a purified candidate antigen.
4. The method of claim 3 wherein between one and fifty different purified candidate
15 antigens are introduced into the animal.
5. The method of claim 4 wherein between 0.001 and 1000 micrograms of each antigen is introduced into the animal.
6. The method of any one of claims 1 to 5 comprising the additional step of supplying the animal with a booster dose of some or all of the antigens which were introduced into
20 the animal prior to the removal of antibody-producing cells.
7. The method of any one of claims 1 to 6 wherein the antibody-producing cells are B cells, T cell or stem cells.
8. The method of any one of claims 1 to 7 wherein the antibody-producing cells are recovered by removal of spleen tissue, lymph nodes or bone marrow of the animal.
- 25 9. The method of any one of claims 1 to 8 wherein the immortalized cell line is a hybridoma cell line produced by somatic fusion of the cells in the single cell suspension to myeloma cells.
10. The method of any one of claims 1 to 9 wherein said protein chip is a plain-glass slide, a 3D gel pad chip, a microwell chip or a cell chip.

11. The method of any one of claims 1 to 10 wherein the step of detecting the monoclonal antibodies bound to the antigens further comprises isotyping the monoclonal antibodies.
12. The method of claim 11 wherein said step of detecting and isotyping the monoclonal antibodies comprises adding isotype specific anti-immunoglobulin antibodies to said protein chip, wherein each anti-immunoglobulin antibody having a different isotype specificity has a different label, and detecting the presence of said labels.
13. The method of any one of claims 1 to 12 further comprising assessing the specificity with which each isolated monoclonal antibody binds to an antigen using a protein chip comprising said antigen.
14. A high-throughput method for producing a plurality of monoclonal antibodies, each of which binds to a different candidate antigen, comprising the steps of:
- a) introducing a plurality of candidate antigens into an animal;
 - b) recovering antibody-producing cells from said animal and rendering these cells into a single cell suspension;
 - c) generating immortalized cell lines from said single cell suspension;
 - d) screening the supernatant of said immortalized cell lines against one or more protein chips on which the candidate antigens are displayed; and
 - e) selecting as said monoclonal antibodies, antibodies that bind to said candidate antigens.
15. A method according to claim 14, which further comprises any of the steps recited in any one of claims 1 to 13.
16. A method for producing an immortalised cell line that produces a monoclonal antibody of interest, said method comprising the steps of:
- a) introducing at least one candidate antigen into an animal;
 - b) recovering antibody-producing cells from said animal and rendering these cells into a single cell suspension;
 - c) generating an immortalized cell line from said single cell suspension;
 - d) screening the supernatant of said immortalized cell line against a protein chip on which the candidate antigen is displayed; and

- e) selecting as said immortalised cell line, that which produces a supernatant containing an antibody that binds to said candidate antigen.
17. An immortalised cell line isolated by the method of claim 16.
18. A method for producing a plurality of monoclonal antibodies, each of which binds to a
5 different purified candidate antigen, comprising introducing a plurality of purified candidate antigens into an animal, each purified candidate antigen being derived from a different source.
19. A method according to claim 18 which further comprises any of the steps recited in any one of claims 1 to 13.
- 10 20. A monoclonal antibody isolated by the method of any one of claims 1 to 16 or 18 to 19.
21. An antibody according to claim 20 which is an anti-idiotypic antibody.
22. An antibody according to claim 21 which is an anti-anti-idiotypic antibody.
23. An immortalized cell line producing a monoclonal antibody of claim 20, claim 21 or claim 22.
- 15 24. An immortalized cell according to claim 23 which is a hybridoma cell line.
25. A bank of antibodies according to claim 20, claim 21 or claim 22.
26. A bank of immortalized cell lines according to claim 15, claim 21 or claim 22.